PATENT
450108-02465
RECEIVED
CENTRAL FAX CENTER
MAY 07 2007

REMARKS

In light of the above amendatory matter and remarks to follow, reconsideration and allowance of this application are respectfully solicited.

Claims 31 and 37 are amended for the purpose of clarifying the recitations therein. Claim 35 is amended to be consistent with claim 31; and claim 34 is canceled to avoid redundancy. Claims 31-33 and 35-37 are presented for consideration. Entry of this amendment is respectfully requested.

It is submitted that these claims, as originally presented, are patentably distinct over the prior art cited by the Examiner, and that these claims were in full compliance with the requirements of 35 USC 112. Changes to these claims, as presented herein, are not made for the purpose of patentability within the meaning of 35 USC sections 101, 102, 103 or 112. Rather, these changes are made simply for clarification.

In the Office Action under reply, Claims 31 and 34-37 are rejected under 35 USC 103 as being obvious in view of the combination of Yonemitsu (U.S. Patent 5,461,420), Hoogenboom (U.S. Patent 5,517,250) and Bennett (U.S. Patent 6,278,733). Claims 32 and 33 are rejected under 35 USC 103 as being obvious over the aforementioned combination, further combined with Azadegan (U.S. Patent 5,612,900). Claim 31 is independent and is directed to a video encoding system. Claim 37 also is independent and is directed to the video encoding method performed by the system of claim 31. Claims 31 and 37 recite very similar limitations; and in the interest of brevity, the following discussion is directed to claim 31; but it should be understood that this discussion is equally applicable to claim 37.

Claims 31 and 37 are amended to clarify the subject matter defined thereby. It is apparent from the Examiner's stated reasons for rejection that the elements and operation of the claimed encoding system (and claimed encoding method) may not have been set forth with the proper clarity, thus resulting in the rejection of the claims. As presented herein, claims 31 and 37 (as well as claims 32-33 and 35-36 that depend from claim 31) are patentably distinct over the cited prior art and are in condition for allowance..

Applicants' invention addresses the problem of the delay in creating the packetized elementary stream from, for example, MPEG-encoded data (see pages 2-6 of Applicants' specification). MPEG-encoding creates I, P and B pictures as a compressed representation of input video frames. The order in which these compressed pictures, or frames, are created differs from the order in which these compressed frames are transmitted because the order in which these frames are transmitted is the order in which they are decoded so as to recover the original pictures. The transmitted I, P and B pictures are packetized; and included in the packets are presentation time stamps (PTS) for each picture, or frame, representing the time at which that picture is to be displayed, and decoding time stamps (DTS) for each picture, representing the time at which that picture is to be decoded. For example, and as shown in Fig. 2A of the instant application, the original video frames are MPEG-encoded as I1 B2 B3 P4 B5 B6 P7 ... pictures, which is the presentation sequence, but the I1 and P4 pictures are needed to decode the B2 and B3 pictures. Hence, the order in which these pictures are arranged for transmission is the order in which those pictures should be received for decoding, and this is different from the order in which the pictures are displayed (or presented). Consequently, to decode the B pictures

properly, the MPEG-encoded pictures should be received in the decoding order as I1 P4 B2 B3 P7 B5 B6 P10 ...as shown in Fig. 2B.

Packetizing adds the PTS and DTS to each picture. However, since the PTS represents the time at which that picture is displayed, the correct PTS for a picture cannot be generated until the picture type is determined -- that is, until it is determined whether the picture is a P or a B picture. Moreover, the number of B pictures interspersed between successive P pictures is not fixed. Therefore, since a P picture is to be displayed after B pictures, the PTS for that P picture must be delayed until the correct number of B pictures that precede the P picture are counted. As a result, the encoding process is delayed. See the explanation at page 5 of Applicants' specification. Applicants recognized that the delay in generating the PTS's for the compressed pictures is (n+2) frames, where n is the number of successive B pictures interspersed between successive P pictures or between an I picture and the next-following P picture.

This delay in generating the PTS's is further complicated when the frame rate, or frame frequency, of the input video data is changed, such as by a 3:2 pull-down conversion, for example, from an input frame rate of 24 Hz to an output frame rate of 30 Hz. When so converted, the pictures that constitute the elementary stream ES are formed of 2 or 3 fields, as shown and described with reference to Applicants' Fig. 7 and the PTS and DTS for each frame is dependent upon the frame structure and picture type (i.e. the number of fields in that frame and whether that frame is an I, P or B picture.

Applicants' invention, as defined by claim 31 (and also by claim 37) overcomes the problem of delay in packetizing the encoded pictures by counting the fields of the input video data, generating picture order information (e.g. I1 P4 B2 B3 P7 B5 B6 P10 ...) based on the field count, producing a presentation time stamp count that corresponds to the field count, producing a

decoding time stamp count and inserting the presentation and decoding time stamp counts into the packetized elementary stream. By using the field count to generate the picture order information and the presentation time stamp count, it is not necessary to wait until the arrival of a P picture to then generate the presentation time stamp counts for the preceding P and B pictures. Hence, the problem of delay, mentioned above, is avoided.

This improvement and the novel features of the invention are defined by claim 31 which recites, *inter alia*:

> counting means for counting fields in the input video data having a particular frame frequency;
>
> ***
>
> ... said encoding means generating said picture order information based on the fields counted in said counting means; said picture order information including a presentation time stamp count corresponding to the count of said counting means and a decoding time stamp count representing decoding times for the pictures of said elementary stream;
>
> ***
>
> extracting means for extracting from said input video data information representing number of lines corresponding to a vertical start position of an active video area and number of samples corresponding to a horizontal start position of said active video area; and
>
> supply means for supplying the extracted information to a controller thereby supplying unique information pertaining to V-phase and H-phase positioning of said active video area.

It is submitted that Yonemitsu, Hoogenboom and Bennett, taken alone or in combination as the Examiner has attempted to do, fail to disclose the aforequoted features recited in claim 31. Yonemitsu shows, in Fig. 3, an encoding arrangement with a field order re-arrangement circuit 104 that receives a video signal from which duplicate fields are removed (a 2:3 pull-down arrangement). The Examiner cites col. 5, lines 49-52 of Yonemitsu as a teaching of counting

fields in the input video data. But neither this portion of Yonemitsu nor any other portion cited by the Examiner discloses or even suggests that the fields of the input video signal should be counted. It follows, therefore, that Yonemitsu, who does not suggest counting the fields, does not generate picture order information based on the counted fields and does not suggest producing a presentation time stamp count corresponding to the field count.

Hoogenboom was relied upon by the Examiner for a teaching, at col. 6, lines 30-34 and col. 7, lines 6-14, of generating picture order information based on the fields and including presentation and decoding time stamps. But Hoogenboom decodes a received compressed video signal. There is no teaching or suggestion of generating picture order information; nor is there a teaching or suggestion of using counted fields to generate picture order information.

While the Examiner is correct in noting that Hoogenboom refers to PTS and DTS time stamps at col. 9, lines 39-46, this time stamp information merely is received in the PES header. This clearly does not correspond to claim 31 which states that the presentation time stamp count corresponds to the field count. Applicants' representative does not dispute the Examiner's statement that time stamp information is necessary to transmit the packet properly over a network. Rather, Applicants' representative wishes to emphasize that Hoogenboom does not produce the time stamp information in the manner claimed by Applicants; and that underscores patentable differences between Applicants' claims and the prior art.

Bennett, which was relied upon to meet Applicants' claimed extracting means, digitally encodes VBI signals so they may be represented in compressed form. It is at the decoder that Bennett reconstructs the VBI signal (col. 7, lines 48-60). The Examiner refers to Figs. 1-3 of Bennett as a teaching of extracting ancillary data from the input video signal to supply information pertaining to the V-phase and the H-phase positioning. But, Bennett fails to teach or

even suggest the extraction of "information representing number of lines corresponding to a vertical start position of an active video area and number of samples corresponding to a horizontal start position of said active video area." While Bennett identifies the number of the VBI line into which the VBI data is placed, he does not supply "unique information pertaining to V-phase and H-phase positioning of said active video area" as recited by Applicants' claim 31.

Therefore, it is respectfully submitted, that even the piecemeal assemblage of bits and pieces from each of Yonemitsu, Hoogenboom and Bennett still fails to suggest to one of ordinary skill in the art the features of Applicants' invention that solve the problem of delay in creating the packetized elementary stream from encoded picture data, especially if that encoded picture data is converted from one frame frequency to another. Furthermore, it is submitted that the combination of Yonemitsu, Hoogenboom and Bennett is unwarranted. There is no motivation or suggestion to combine Yonemitsu, who suffers from the very delay problem that is overcome by the present invention, with Hoogenboom, who is concerned with recovering time stamp information from received compressed video data (as opposed to generating that time stamp information from counting fields), and Bennett, who is concerned with decoding VBI data. It is respectfully submitted that the Examiner has used Applicants' claims as a guide to reconstruct the prior art by assembling individual, unrelated bits and pieces. It is improper to use the hindsight gained from Applicants' specification, and then use that hindsight to reassemble the prior art in an effort to reject Applicants' claims. The only motivation to use Hoogenboom and Bennett in the manner attempted by the Examiner is provided solely by Applicants themselves. The Court of Appeals for the Federal Circuit, as well as its predecessor court, has long held that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. It

is impermissible to use Applicants' claims as a frame and the prior art references as a mosaic to piece together a facsimile of the claimed invention. But that is precisely what has been done in the present case. For this reason alone, the rejection of claim 31 should be withdrawn.

Claim 37 is directed to the method performed by the system of claim 31. Claim 37 recites the same elements, in method context, as are recited by claim 31. That these elements are not suggested by the prior art has been pointed out above. Accordingly, claim 37 is patentably distinct over the combination of Yonemitsu, Hoogenboom and Bennett for the very same reasons discussed above. The rejection of claim 37 should be withdrawn.

Claims 32-33 and 35-36 depend from and further limit the system defined by claim 31. Since claims 32-33 and 35-36 thus include the same elements as are recited by claim 31, these dependent claims are patentably distinct over Yonemitsu, Hoogenboom and Bennett for the reasons argued above. The addition of Azadegan (U.S. Patent 5,612,900) to meet the terms of dependent claims 32 and 33 fails to cure the aforenoted deficiencies of Yonemitsu, Hoogenboom and Bennett. Hence, claims 32 and 33 are patentable over the extended combination of Yonemitsu, Hoogenboom, Bennett and Azadegan. The rejection of claims 32-33 and 35-36 should be withdrawn.

Statements appearing above in respect to the disclosures in the cited references represent the present opinions of the undersigned attorney and, in the event the Examiner disagrees with any of such opinions, it is respectfully requested that the Examiner specifically indicate those portions of the references providing the basis for a contrary view.

PATENT
450108-02465

Please charge any additional fees that may be needed, and credit any overpayment, to our Deposit Account No. 50-0320.

Respectfully submitted,

FROMMER, LAWRENCE & HAUG LLP
Attorneys for Applicant

By: _____
William S. Frommer
Reg. No. 25,506
(212) 588-0800